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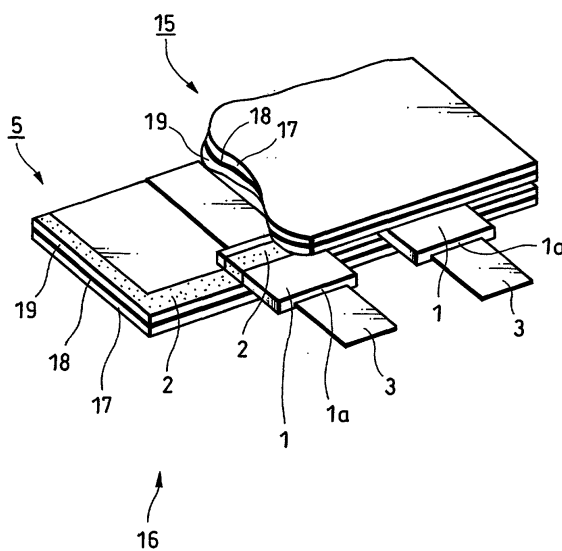
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(54) **Lead for use with lithium-ion secondary cell, lead ribbon, lithium-ion secondary cell and method of sealing container of lithium-ion secondary cell**

(57) A lithium-ion secondary cell is provided to remarkably improve a mechanical peel strength of heat fusion-bonding portions of a container as well as to improve a moisture permeability resistance, a sealing performance, a barrier property, a safety or the like of the container. A lead (3) for use with a lithium-ion secondary cell according to the present invention is sandwiched by heat fusion-bonding portions (2) of a container (5) so as to be exposed in the outside of the container (5) when the container (5) is sealed by heat fusion-bonding. The lead (3) is coated with a heat fusion-bonding seal material (1). This heat fusion-bonding seal material (1) has an excellent adhesion to the lead (3) rather than a material of a sealant layer (19). Also, in the lithium-ion secondary cell, an end portion (1a) on the outside portion in the longitudinal direction of the lead (3) in the layer made of the heat fusion-bonding seal material (1) is exposed from the end face of the container (5). Moreover, the lithium-ion secondary cell may have the lead (3) having a mesh structure.

FIG. 8





DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 4 278 744 A (ATHEARN LEE F) 14 July 1981 (1981-07-14)	1,4,6, 11,12	INV. H01M2/06
Y	* column 1, line 34 - line 41 *  * column 2, line 38 - line 44 * * column 4, line 45 - line 67 * * column 5, line 13 - line 17 * * column 6, line 9 - line 22 * * figure 2 *	7-10, 15-19	H01M2/08 H01M10/40
X	WO 97/08762 A (VALENCE TECHNOLOGY INC [US]) 6 March 1997 (1997-03-06) * abstract *	1-3,11, 14,20	
Y	* page 10, line 15 - line 17 *	7-10, 15-19	
X	JP 60 230353 A (MATSUSHITA ELECTRIC IND CO LTD; DAINIPPON PRINTING CO LTD) 15 November 1985 (1985-11-15) * abstract; figures 1,2 *	1,4,5	
Y	EP 0 390 557 A2 (MHB JOINT VENTURE [US]) 3 October 1990 (1990-10-03) * column 11, lines 5-8 - lines 44-54; figure 4 *	16,19	TECHNICAL FIELDS SEARCHED (IPC) H01M
A	US 4 206 844 A (THUKAMOTO SUNAO [JP] ET AL) 10 June 1980 (1980-06-10) * column 6, line 5 - line 7 *	14,17	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 7 December 2006	Examiner Hintermaier, Frank
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 99 10 3437

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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07-12-2006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4278744 A	14-07-1981	NONE	
-----	-----	-----	-----
WO 9708762 A	06-03-1997	AU 6604496 A	19-03-1997
-----	-----	-----	-----
JP 60230353 A	15-11-1985	JP 1827607 C	28-02-1994
		JP 5026300 B	15-04-1993
-----	-----	-----	-----
EP 0390557 A2	03-10-1990	CA 2011720 A1	30-09-1990
		DE 69031239 D1	18-09-1997
		DE 69031239 T2	14-05-1998
		ES 2107416 T3	01-12-1997
		JP 3015150 A	23-01-1991
-----	-----	-----	-----
US 4206844 A	10-06-1980	NONE	
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